PATENT APPLICATION
Serial No. 09/148,749
Attorney Docket No. 3237-990857

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

#6

Group Art Unit 1742 :

In re Application of :

GAYLORD D. SMITH ET AL. : ADVANCED HIGH TEMPERATURE CORROSION RESISTANT ALLOY

Serial No. 09/148,749 :

Filed September 4, 1998 :

Examiner - Tamara Gray :

Pittsburgh, Pennsylvania
August 29, 2000

TRANSMITTAL OF SUPPLEMENTAL
INFORMATION DISCLOSURE STATEMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Pursuant to the requirements of 37 C.F.R. §§ 1.56, 1.97 and 1.98, Applicants hereby submit this Supplemental Information Disclosure Statement which includes a completed Form PTO-1449 and a copy of each reference listed thereon.

The prior art references being called to the attention of the Examiner herein were cited in an International Patent Office Search Report dated February 3, 2000, in connection with the corresponding PCT International Application No. PCT/US99/19105 filed August 18, 1999.

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to Assistant Commissioner for Patents, Washington, D.C. 20231 on August 29, 2000.

Kent E. Baldauf, Registration No. 25,826
(Name of Registered Representative)

Kent E Baldauf 8/29/00
Signature Date

A copy of the International Search Report is also enclosed herewith for the Examiner's convenience.

It will be noted that two of the prior art references listed in the International Search Report are Category "X" documents ("of particular relevance"), *viz.*, U.S. Patent No. 3,015,558 to Grant et al. and EP 0 790 324 of Ebara Corp., which will be discussed in greater detail below.

The International Search Report has also identified a published PCT application WO 99 67436 of INCO Alloys International, Inc. (assignee of the instant application) as a category "E" document (published after the international filing date). This document is not a viable reference against the instant application since it is commonly owned and bears a publication date of December 29, 1999, which is subsequent to the September 4, 1998 filing date of the instant application.

The balance of the prior art documents cited in the International Search Report are identified as Category "A" documents ("state of the art") and need not be discussed in any detail herein.

U.S. Patent No. 3,015,558 to Grant et al. ("Grant et al.") discloses a Ni-Cr-Al alloy which is said to be age hardenable with improved physical properties at elevated temperatures. Grant et al. broadly teaches an alloy composition at column 2, lines 8-24 containing 28-45% Cr, 1-6% Al, the balance substantially Ni, wherein the Ni + Cr content is at least 70% and the Ni:Cr ratio is at least 1:1 to 2.25:1. The alloy may also contain optional ingredients of up to 20% Fe, up to 10% Mo, up to 15% Co, up to 3% Ti, up to 2% Cb and/or Ta, up to 4% Si, up to 2% Mn and up to 2% Sn. A preferred alloy composition according to Grant et al. (column 2, lines 24-30) 30-40% Cr, 2-5% Al, balance substantially Ni, wherein the Ni + Cr content is at least 80% and the ratio of Ni:Cr is 1.3:1. Optional ingredients as listed above may also be added.

Grant et al. discloses in column 6, line 3 bridging to column 7, line 27, so-called Type II alloys which purportedly exhibit "outstanding oxidation resistance with great formability" and "offer very high strength at temperatures up to about 1200°F which are said to be useful in aircraft gas turbine combustion liners and other parts. Table IV in column 6 lists the preferred Type II alloys of Grant et al. as containing 40% Cr, 54-58% Ni, 2% Al and 0-4% Si.

The claims of the present invention clearly define in a patentable sense over the disclosure of Grant et al. Claim 1 of the instant application specifies 21.5-28% Cr, while Grant et al. discloses a broad range of 28-45% Cr. Independent claims 7 and 13 further define over Grant et al. by specifying a maximum Cr content of 27%. As pointed out in the instant specification on page 3, lines 10-11, Cr levels above 28% as in Grant et al. can produce detrimental Cr-containing precipitates. In addition, Grant et al. fails to recognize the criticality of the 12-18% Co range in enhancing corrosion resistance, and the 4-9.5% Mo addition contributing to stress corrosion cracking resistance and solid solution strengthening is nowhere recognized in Grant et al. Likewise, Grant et al. fails to teach the criticality of 0.01 minimum Zr for sulfidizing resistance nor Y additions of at least 0.005 for both oxidation and nitridation resistance.

The second Category "X" document EP 0 790 324 of Ebara Corporation corresponds to U.S. Patent No. 5,900,078 to Yakuwa et al. (hereinafter referred to as "Yakuwa et al."). Yakuwa et al. teaches a high-temperature sulfidation-corrosion resistant nickel-base alloy which includes 12-15% Co, 18-21% Cr, 3.5-5% Mo, 0.02-0.1% C, 2.75% max. Ti, at least 1.6% Al, and the balance being essentially nickel. The alloy may also include 0.003-0.01% B and 0.02-0.08% Zr. The alloy is said to be useful in gas expander turbines for energy recovery in a petroleum refining plant.

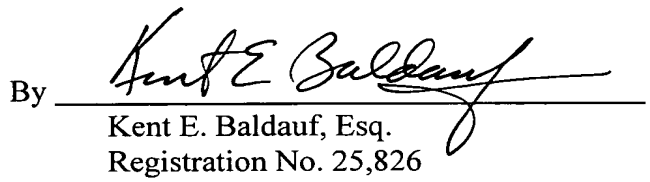
The present invention patentably defines over Yakuwa et al. with respect to the Cr range of 21.5-28% Cr of claim 1, 21.5-27% Cr of claim 7 and 22-27% Cr of claim 13. Yakuwa et al. also fails to teach or suggest the criticality of at least one of 0.005-0.1 Y and 0.01-0.6 Zr in claim 1 for both oxidation and nitridation resistance. Further, Yakuwa et al. does not teach or suggest the additions of 0.01-0.8 Hf and 0.00001-0.08% N in order to stabilize the oxide scale to contribute to increased oxidation resistance as set forth in claim 7, for example.

The presently claimed invention represents a patentable advance over the prior art cited herein and the Examiner's favorable action is respectfully requested.

A Petition and the requisite fee accompany this Information Disclosure Statement.

Respectfully submitted,

WEBB ZIESENHEIM LOGSDON
ORKIN & HANSON, P.C.

By 

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GP/1742 ##

PATENT APPLICATION
Serial No. 09/148,749
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

#7

Group Art Unit 1742	:	
In re Application of	:	
GAYLORD D. SMITH ET AL.	:	ADVANCED HIGH TEMPERATURE CORROSION RESISTANT ALLOY
Serial No. 09/148,749	:	
Filed September 4, 1998	:	
Examiner - Tamara Gray	:	

Pittsburgh, Pennsylvania
August 29, 2000

PETITION TO ACCEPT SUPPLEMENTAL
INFORMATION DISCLOSURE STATEMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Applicants received an International Search Report in a counterpart foreign application which issued February 3, 2000. Applicants enclose herewith a Supplemental Information Disclosure Statement listing those references cited in the International Search Report and ask that the references cited thereon be considered in the above-referenced patent application.

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to Assistant Commissioner for Patents, Washington, D.C. 20231 on August 29, 2000.

Kent E. Baldauf, Registration No. 25,826
(Name of Registered Representative)

Kent E. Baldauf 08/29/00
Signature Date

A check in the amount of $240.00 is enclosed to cover the fee for this Petition.

Respectfully submitted,

WEBB ZIESENHEIM LOGSDON
ORKIN & HANSON, P.C.

By _____

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